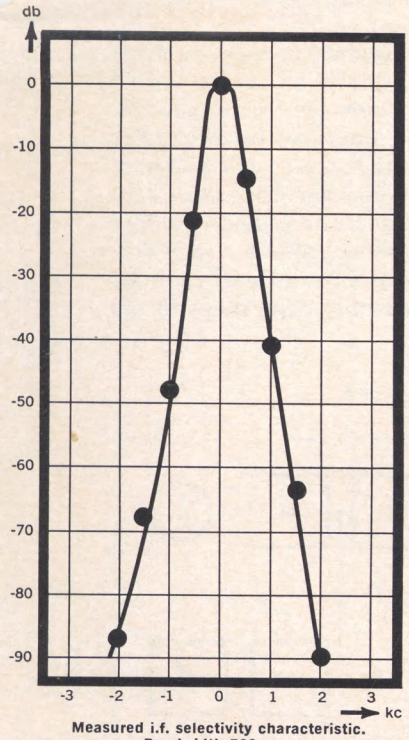
Type **USVH**

10 kc TO 30 mc

Selective Microvoltmeter

Unique Features

- **Extremely wide frequency range: 10 kc to 30 mc.**
- **Full-scale deflections, 1 μv to 1 v.**
- **Six input impedances from 50 Ω to 500 kΩ available.**
- **Fine frequency adjustment: ±2.5 kc.**
- **Bandwidth, selectable: 500 cps and 5 kc.**



Measured i.f. selectivity characteristic. Bandwidth 500 cps.

Specifications

	Order No. BN 1521
Frequency range	10 kc to 30 mc
in 6 sub-ranges	10 to 100/300 kc/1/3/10/30 mc
Frequency accuracy	±2% ± 3 kc at 10 kc to 1 mc ±2% ±50 kc at 1 mc to 30 mc
Fine tuning control in narrow-band operation	—2.5 - 0 - +2.5 kc
Voltage range	1 μv to 1 v, full-scale deflections, in 1 : 3 steps
db range	—118 to +2 db in 10-db steps
Selectable scale expansion	relative calibration from 0.7 to 1
Accuracy, at 1 mc and 1 v	±2%
Frequency response, referred to 1 mc	± 5% at 20 kc to 10 mc ±10% at 10 kc to 30 mc
Attenuator accuracy	±2%
Bandwidth, selectable	500 cps and 5 kc
Selectivity with the instrument off tune by twice the bandwidth	response down more than 40 db at 500-cps bandwidth 60 db at 5-kc bandwidth
Image-frequency rejection	better than 60 db
Noise at a bandwidth of 500 cps	approx. 0.15 μv
at a bandwidth of 5 kc	approx. 0.4 μv
Input	13-mm socket
Input impedance, switch-selected	50/60/70/75/150 Ω and 500 kΩ in shunt with 20 μμf
A-f output	telephone jacks
Output impedance	approx. 6 kΩ
Output voltage	approx. 1 v at 30% modulation
Power supply	115/125/220/235 v, 47 to 63 cps (85 va)
Dimensions	540 x 268 x 378 mm (21¼" x 10⅝" x 15") (R&S Standard Cabinet 57)
Weight	30 kg (66 lb)

ROHDE & SCHWARZ

SALES CO. (U.S.A.), INC.
111 LEXINGTON AVENUE (P.O. BOX 148)
TEL. PRescott 3-8010
PASSAIC, NEW JERSEY

SELECTIVE MICROVOLTMETER USVH

Uses

Outstanding for its unusual sensitivity and sharpness in tuning, the Selective Microvoltmeter Type USVH is suitable for a great number of measurements which to date could not be made with a voltmeter or were possible only in conjunction with additional equipment.

A few examples showing where the Selective Microvoltmeter Type USVH is used in practice are:

(a) Selective attenuation and frequency-response measurements on four-terminal networks, up to 140 db. In particular, the instrument is very useful whenever the network under test will withstand only relatively small voltages.

(b) Selective frequency-response measurements on amplifiers or filters within their pass bands, the expanded scale with the relative calibration from 0.7 to 1 then offering ease of reading for very small changes in output from the item under test.

(c) Measurement of the r-f distortion of long-, medium- and short-wave transmitters, values as low as 0.1% or 60 db can be determined.

(d) Modulation-depth measurements with carrier frequencies from 10 kc to 30 mc and modulation frequencies over 1 kc.

(e) Envelope distortion down to 0.1% can be calculated after the amplitudes of a sideband have been measured.

(f) Measurement of inter-channel cross-talk attenuation in carrier-frequency systems.

(g) Checking of signal-generator attenuators down to 1 μv, with an accuracy of 2%. Heretofore, attenuation boxes were used as a rule in comparison measurements.

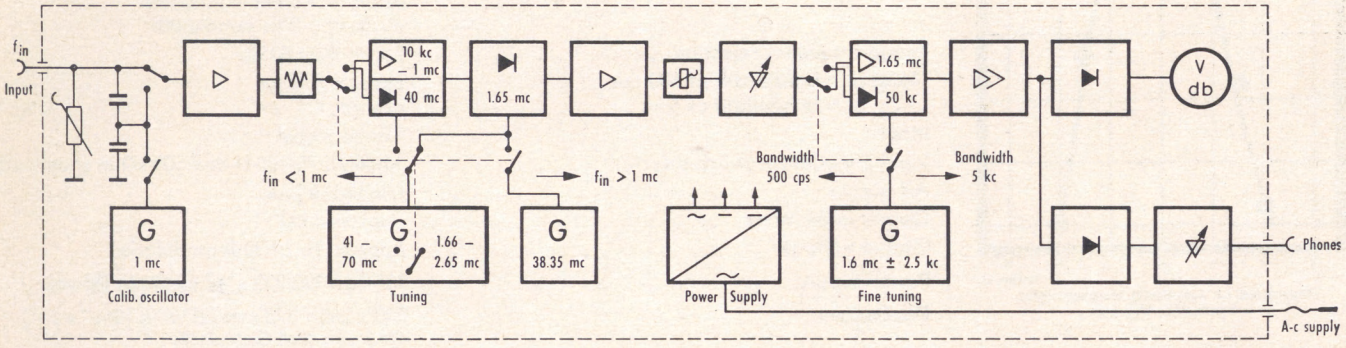
(h) R-f leakage measurements on screens and r-f chokes, fractions of a microvolt still being well readable.

Another use of the Type USVH is as a long-, medium- and short-wave receiver since the demodulated i-f voltage is brought out to a head-phone socket. Loading of this output does not affect the reading.

Description

The Selective Microvoltmeter Type USVH is a highly sensitive superheterodyne receiver whose output voltage is read by a diode voltmeter. A switch permits selection of any of the conventional input impedances. Single frequency changing is used for input frequencies from 10 to 1000 kc, double frequency changing for frequencies from 1 to 30 mc, the bandwidth being 5 kc in both cases. Additional frequency conversion takes place in 500-cps narrow-band operation. The local oscillator used for this type of operation can be varied in frequency by about ±2.5 kc and thus permits shifting of the 500-cps pass band over the 5 kc bandwidth present up to this frequency conversion. There is a voltage divider directly in the input and an attenuator at another stage of the instrument. The meter is calibrated in volts and decibels and features an additional expanded scale with a relative calibration from 0.7 to 1. This scale expansion can be selected for any voltage range and is brought about by biassing the rectifier with a stabilized d-c voltage. A head-phone output connected via a detector and a buffer stage provides aural monitoring when the input voltage is modulated. A built-in calibration oscillator permits checking and, if necessary, adjustment of the overall gain for the nominal value. The power supply is electronically regulated and thus considerably contributes to the stability of the instrument with regard to gain and frequency accuracy.

Valve complement: 1 x E 180 F, 1 x EC 93, 4 x ECC 81, 5 x EF 800, 1 x EF 804 S, 2 x PL 81, 1 x 85 A 2



We reserve the right to make any departures from this specification, especially those considered desirable for reasons of improved design.

ROHDE & SCHWARZ SALES CO. (U.S.A.) Inc.

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